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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/695,211

10/28/2003

Steven Gerard Ross

136122CT

4501

7590

10/12/2006

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EXAMINER

HO, ALLEN C

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/695,211 | | ROSS ET AL. | |
| | Examiner | | Art Unit | |
| | Allen C. Ho | | 2882 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 10-13 and 20-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10-13 and 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 2, 3, 12, and 13 are objected to because of the following informalities:

Claims 2, 3, 12, and 13 recite the limitation "said first collimator". There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

2. Claim 11 is objected to because of the following informalities:

Claim 11 recites the limitation "the x-ray beam" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

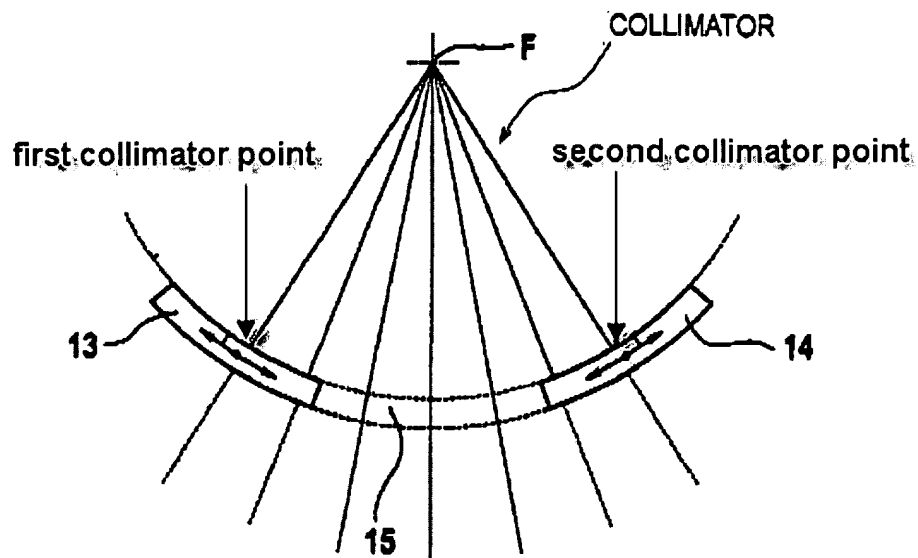
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 10-12, and 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Popescu (U. S. Patent No. 6,501,828 B1).



With regard to claims 1 and 2, Popescu disclosed an imaging system that comprises: a radiation source (3) configured to generate a beam; a collimator (11) configured to collimate the beam to a collimated beam; and a detector (4) configured to detect the collimated beam, wherein the collimator is separated from the detector and comprises at least one radio opaque member (13, 14) having a curved contour proportional to a contour of the detector, wherein the collimator includes a first collimator point at a first collimator distance from the radiation source and a second collimator point at a second collimator distance from the radiation source (the second collimator distance is equal to the first collimator distance because the first collimator point and the second collimator point are symmetrical about the radiation source), wherein the detector includes a first detector point at a first detector distance from the first collimator point and a second detector point at a second detector distance from the second collimator point (the second detector distance is equal to the first detector distance because the first detector point and the second detector point are symmetrical about the radiation source), and wherein a sum of the first

collimator distance and the first detector distance is equal to a sum of the second collimator distance and the second detector distance.

With regard to claim 10, Popescu disclosed an imaging system in accordance with claim 1, wherein the collimator is located between a subject (P) and the radiation source.

With regard to claims 11 and 12, Popescu disclosed a computed tomography imaging system that comprises: an x-ray source (3) configured to generate a beam; a collimator (11) configured to collimate the x-ray beam to generate a collimated x-ray beam; and a detector (4) configured to detect the collimated x-ray beam, wherein the collimator is separated from the detector and comprises at least one radio opaque member (13, 14) having a curved contour proportional to a contour of the detector, wherein the collimator includes a first collimator point at a first collimator distance from the x-ray source and a second collimator point at a second collimator distance from the x-ray source (the second collimator distance is equal to the first collimator distance because the first collimator point and the second collimator point are symmetrical about the x-ray source), wherein the detector includes a first detector point at a first detector distance from the first collimator point and a second detector point at a second detector distance from the second collimator point (the second detector distance is equal to the first detector distance because the first detector point and the second detector point are symmetrical about the radiation source), and wherein a sum of the first collimator distance and the first detector distance is equal to a sum of the second collimator distance and the second detector distance.

With regard to claim 20, Popescu disclosed a method for reducing dosage of radiation incident on a subject, the method comprising: transmitting, from a radiation source (3), a beam of

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radiation toward the subject; collimating (11) the beam of radiation before the beam reaches the subject; and detecting, by a detector (4), the collimated beam of radiation, wherein the collimating is performed by a collimating device (11) that is separate from the detector that comprises at least one radio opaque member (13, 14) having a curved contour proportional to a contour of the detector that detects the collimated beam(column 5, lines 31-39), wherein the collimating device includes a first collimator point at a first collimator distance from the radiation source and a second collimator point at a second collimator distance from the radiation source (the second collimator distance is equal to the first collimator distance because the first collimator point and the second collimator point are symmetrical about the radiation source), wherein the detector includes a first detector point at a first detector distance from the first collimator point and a second detector point at a second detector distance from the second collimator point (the second detector distance is equal to the first detector distance because the first detector point and the second detector point are symmetrical about the radiation source), and wherein a sum of the first collimator distance and the first detector distance is equal to a sum of the second collimator distance and the second detector distance.

With regard to claim 21, Popescu disclosed an imaging system in accordance with claim 1, wherein the at least one radio opaque member comprises at least two cams (13, 14) positionable relative to each other to form a plurality of different sized apertures.

With regard to claim 22, Popescu disclosed an imaging system in accordance with claim 1, wherein the collimator is configured to move in a direction perpendicular to a plane formed by the beam of the radiation source.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Popescu (U. S. Patent No. 6,501,828 B1) as applied to claims 1 and 11 above, and further in view of Okazaki (U. S. Patent No. 5,801,939).

With regard to claims 3 and 13, Popescu disclosed a CT imaging system in accordance with claims 1 and 11. However, Popescu failed to disclose a piezo-electric drive mechanism configured to change the size of the aperture of the collimator.

Okazaki disclosed a precision positioning control apparatus comprising a coarse positioner (**101**) and a fine positioner (**102**). Okazaki taught a piezo-electric drive is capable of higher resolution than a coarse positioner (column 7, lines 27-36).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a piezo-electric drive mechanism, since a person would be motivated to change the size of the aperture in finer increments.

Response to Arguments

7. Applicant's arguments filed 21 September 2006 have been fully considered but they are not persuasive.

With regard to the rejection of claims 3 and 13, the applicants argue that there is no motivation to combine the references. The examiner respectfully disagrees. Popescu disclosed an adjustable collimator (11) that comprises a pair of collimator elements (13, 14). The collimator elements are individually driven by a collimator controller (12). A person skilled in the art would recognize the need to provide an actuator for the respective collimator elements.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Allen C. Ho, Ph.D.
Primary Examiner
Art Unit 2882

06 October 2006